Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte THOMAS E. COWAN, RICHARD H. HOWELL, and CARLOS A. COLMENARES

Appeal No. 2002-2110
Application No. 09/224,748

ON BRIEF

Before HAIRSTON, BARRY, and SAADAT, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1, 2, 4-13, 17, and 18. The appellants appeal therefrom under 35 U.S.C. § 134(a). We affirm-in-part.

BACKGROUND

The invention at issue on appeal uses positron emission tomography ("PET") to detect cracks and other surface anomalies in metallic or mechanical parts. During manufacturing and long-term storage of such parts, cracks, voids, and porous regions need to be detected. This is of particular concern in maintaining nuclear stockpiles. (Spec. at 1.)

According to the appellants, conventional radiographic techniques are prone to miss small cracks. For example, the minimum width of a crack that can be detected by computed tomography is about 40 µm; the minimum width of a crack that can be detected by neutron radiograph, about 1mm. (*Id.* at 1-2.)

PET is a known technology for medical imaging. The invention applies PET, however, to detect the presence of cracks and similar anomalies on surfaces of metallic or mechanical parts and to locate those features with millimeter spatial resolution. More specifically, a radioactive gas is directed onto the surface of a part to be inspected. The gas is then pumped away, leaving a fraction of a monolayer of gas on the surface. Coincident gamma-rays are detected to determine the location and shape of cracks, voids, or porous regions and to calculate the width, depth, and length thereof. The appellants assert, "[d]etection of 0.01µm wide by 10 µm deep cracks is possible with the . . . invention." (*Id.* at 2.)

A further understanding of the invention can be achieved by reading the following claim.

> 17. A method using positron-emission tomography for detecting chemical surface features, comprising:
>
> producing positron-emitting radioisotopes on the surface of a material by activation of a pre-existing material containing positron-emitting radioisotopes,

detecting positron-sensitive gamma-rays emitted from the surface using a pair of oppositely positioned positron-sensitive gamma-ray detectors, and

characterization of the emitted gamma rays by positron emission tomography.

Claims 17 and 18 stand rejected under 35 U.S.C. § 112, ¶ 1, as non-enabled. Claims 1, 2, and 4-8 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,983,841 ("Stewart"). Claims 9-13 stand rejected under § 103(a) as obvious over Stewart and U.S. Patent No. 5,453,615 ("Mis").

OPINION

Our opinion addresses the rejections in the following order:

- non-enablement rejection of claims 17 and 18
- obviousness rejections of claims 1, 2, and 4-13.

Non-enablement Rejection of Claims 17 and 18

Rather than reiterate the positions of the examiner or the appellants *in toto*, we address the main point of contention therebetween. Observing that, "[t]he [appellants'] specification at page 5 defines and distinguishes specifically *chemical* surface features (as recited in the preamble of independent claim 17) as 'regions of different reactivity to tracer material' (line 25)," (Examiner's Answer at 4), the examiner asserts, "[w]hen a

pre-existing material is activated as recited in independent claim 17 at line 4, there is no *tracer* which has had an opportunity to *react differently* to different regions of the surface." (*Id.*) He adds, "[a] pre-existing material has no chance to react differently to different regions since it is a material which is already a part of the surface (specification page 6, lines 7 and 8) by various known methods of assembly and manufacture which do not include different reactivity between the surface and the pre-existing material as a part thereof." (*Id.*) The appellants argue, "the Appellants' specification and original claims clearly establish[] support for the subject matter of Claim 17, as set forth on page 3, lines 22-23, and page 6, lines 7-8, along with original Claims 3,14." (Appeal Br. at 6.)

> The first paragraph of § 112 follows.
>
> The specification shall contain a **written description** of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to **enable** any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

(Emphases added.) More specifically, the paragraph "requires a 'written description of the invention' which is separate and distinct from the enablement requirement." *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). *See also* Lance Leonard Barry, *A Picture is Worth a Thousand Words: Vas-Cath, Inc. v. Mahurkar*, 76 J. Pat. & Trademark Off. Soc'y 5 (1994) (explaining and

analyzing *Vas-Cath* in detail). "The purpose of the 'written description' requirement is broader than to merely explain how to 'make and use'; the applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*." *Vas-Cath*, 935 F.2d at 1563, 19 USPQ2d at 1117.

The test for satisfaction of the written description requirement "is whether the disclosure of the application relied upon 'reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.'" *Ralston Purina Co. v. Far-Mar-Co.,* 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)). "Application sufficiency under §112, first paragraph, must be judged as of the filing date [of the application]." *Vas-Cath*, 935 F.2d at 1566, 19 USPQ2d at 1119 (citing *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 USPQ2d 1461, 1464 (Fed. Cir. 1989)).

In contrast, "to be enabling under §112, a patent must contain a description that enables one skilled in the art to make and use the claimed invention." *Atlas Powder Co. v. E. I. DuPont de Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984) (citing *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960, 220 USPQ 592, 599

(Fed. Cir. 1983)). "That some experimentation is necessary does not preclude enablement; the amount of experimentation, however, must not be unduly extensive." *Id.* at 1576, 224 USPQ at 413. In view of the different standards for the written description requirement and the enablement requirement, "a specification which 'describes' does not necessarily also 'enable' one skilled in the art to make or use the claimed invention." *In re Armbruster*, 512 F.2d 676, 677, 185 USPQ 152, 153 (CCPA 1975) (citing *In re Mayhew*, 481 F.2d 1373, 179 USPQ 42 (CCPA 1973)).

Here, although the examiner's rejection asserts a failure to satisfy the enablement requirement, the appellants' argument addresses satisfaction of the written description requirement. For example, the appellants argue, "[i]s not that claimed terminology **supported by the description** in lines 22-23 of page 3 of Appellants' specification? Does not item '(6)' on page 6 (lines 6-8) of Appellants' **specification also provide support** for the above-quoted terminology of Claim 17." (Appeal Br. at 7 (emphases added).) Because the argument is non-responsive to the non-enablement rejection, we affirm the rejection of claims 17 and 18.

Obviousness Rejections of Claims 1, 2, and 4-13

Admitting that "Stewart et al. does not specifically state that the width, depth, and length of the mechanical surface anomalies are calculated," (Examiner's Answer at 6),

the examiner asserts, "the presence of imaging computer 42 and the use of image processing techniques to aid analysis and interpretation (column 3, lines 45-47) is suggestive . . . that the location of the mechanical surface anomalies determined with system 36 may be analyzed by computer 42 and the dimensional values calculated to better implement the manufacturing process." (*Id.*) The appellants argue, "there is no teaching or suggestion found in either reference of the claimed . . . 'calculating' operations. . . ." (Appeal Br. at 8.)

"The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) (citing *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)). "[T]he factual inquiry whether to combine references must be thorough and searching." *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). This factual question cannot "be resolved on subjective belief and unknown authority," *In re Lee*, 277 F.3d 1338, 1343-44, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002); "[i]t must be based on objective evidence of record." *Id.* at 1343, 61 USPQ2d at 1434. Although couched concerning combining prior art references, we hold the same requirements apply to modifying such a reference.

Here, we are unpersuaded of the desirability of programming Stewart's "imaging computer 42," col. 4, l. 54, to calculate the width, depth, and length of "residual core material left behind by a preceding core removal step." Col. 1, ll. 6-7. The examiner's conclusion that such a modification would "better implement the manufacturing process," (Examiner's Answer at 6), is not objective evidence of record. More specifically, he proffers no evidence that a "manufacture[r] of air cooled turbine blades for aero engines," col. 1, ll. 9-10, would have benefitted from calculating the dimensions of any residual core material. To the contrary, it appears that Stewart's "visual inspection of the blade[s]," col. 4, l. 55, is sufficient to determine which blades need to "be returned for further leaching. . . ." *Id.* at ll. 58-59. Therefore, we reverse the obviousness rejection of claims 1, 2, and 4-8.

Furthermore, the examiner fails to allege, let alone show, that the addition of Mis cures the aforementioned deficiency. Therefore, we also reverse the obviousness rejection of claims 9-13.

CONCLUSION

In summary, the rejection of claims 17 and 18 under 35 U.S.C. § 112, ¶ 1, is affirmed. The rejections of claims 1, 2, and 4-13 under § 103(a), however, are reversed. "Any arguments or authorities not included in the brief will be refused

consideration by the Board of Patent Appeals and Interferences. . . ." 37 C.F.R. § 1.192(a)(2002). Accordingly, our affirmance is based only on the arguments made in the briefs. Any arguments or authorities not included therein are neither before us nor at issue but are considered waived. No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON Administrative Patent Judge	)
	) BOARD OF PATENT
LANCE LEONARD BARRY Administrative Patent Judge	) APPEALS) AND) INTERFERENCES
MAHSHID D. SAADAT Administrative Patent Judge	)

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